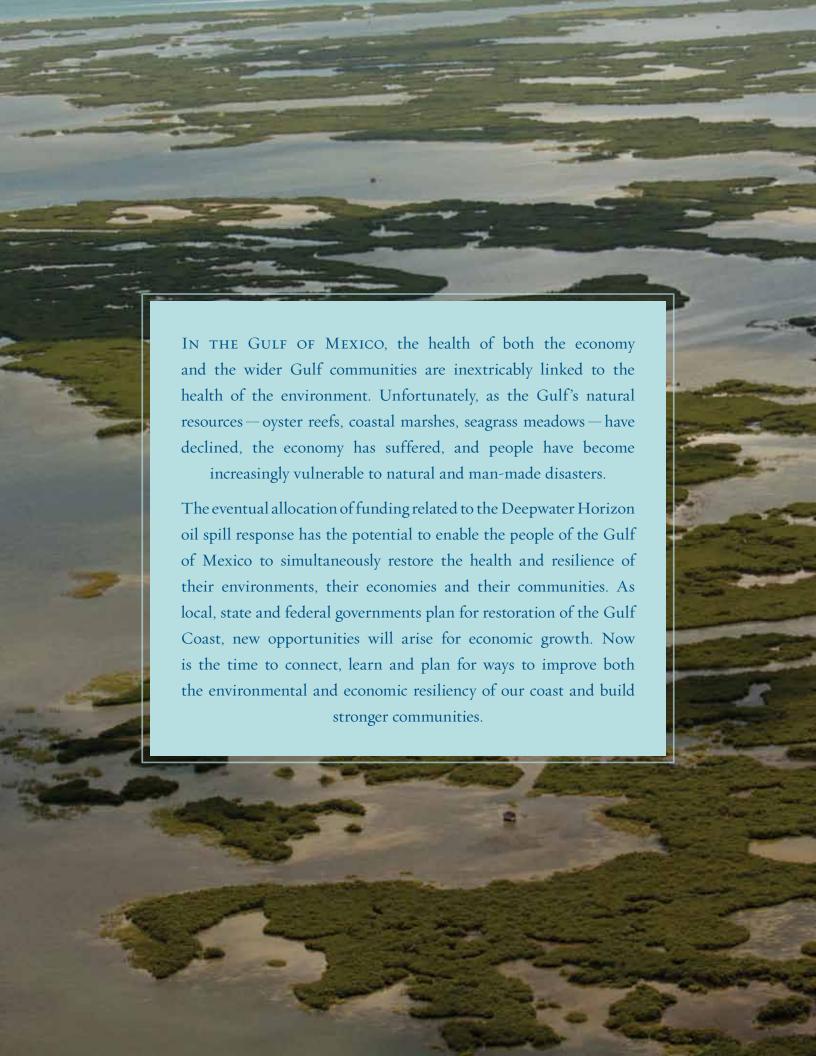




REBUILDING OUR ECONOMY, RESTORING OUR ENVIRONMENT

How the Emerging Restoration Economy Offers New and Expanded Opportunities for Gulf Coast Businesses and Communities



Rebuilding Our Economy, Restoring Our Environment



From food to energy to recreation, transportation and tourism, the Gulf of Mexico is a powerful economic engine both regionally and nationally. Unfortunately, over the last century, the health of the Gulf, its bays, estuaries and tributary rivers has declined, losing both productivity and the ability to protect local communities from storms and other disasters. Hurricane Katrina and the Deepwater Horizon oil spill are the most recent expressions of the ongoing degradation, and they magnify and illustrate the challenges the Gulf faces in continuing to provide all the benefits people rely on for their lives and livelihoods.

With decades of combined experience addressing, respectively, the Gulf Coast's social and environmental challenges, Oxfam America and The Nature Conservancy have come to witness the power of the Gulf as an economic engine and to recognize the depth of its current challenges. The story of the Gulf is one of accelerating change and degradation, of lost livelihoods, disaster and unintended consequences that is all too familiar. But this is more than just a social or even an environmental issue. This is an economic issue. This is the math of supply and demand.

Demand is growing for the products and services the Gulf provides, but the foundation of the supply chain is faltering. Already lost are up to 50 percent of the Gulf's inland and coastal wetlands, up to 60 percent of its seagrass beds, more than 50 percent of oyster reefs, and up to 33 percent of its mangrove forests. In the last 25 years, Louisiana has lost the equivalent of a football field of land per hour.

Since the mid-1900s, nearly 2,000 square miles of fish nurseries, shrimping grounds, recreational paradise, and communities have been lost.³ These natural assets play a critical role in reducing risk from natural disasters. Healthy wetlands, barrier islands and oyster reefs enhance community resilience, protecting homes and businesses by reducing the impacts of storm surge, flooding and sea level rise.⁴

If the Gulf, in its current damaged and declining state, provides at just a fraction of its former abundance, imagine how productive and strong a healthy Gulf could be. Imagine a Gulf where all of the unraveled connections — between people and the land, the land and the water — are knit back together.

Right now, there is a remarkable opportunity to restore the Gulf, to strengthen its traditional industries, spur innovation, accelerate emerging markets centered on environmental restoration, and promote new prosperity. These new markets translate into on-the-ground jobs for workers in the region. For example, a recent economic study estimates that fines to be paid for the 2010 oil spill could create up to 57,697 new jobs in restoration projects in the next ten years alone. ⁵

Gulf of Mexico: By the Numbers

The proof is in the numbers, and the numbers here still tell a story of hope and abundance. The five Gulf Coast states—Alabama, Florida, Louisiana, Mississippi and Texas—contribute \$234 billion in productivity every year to the American economy and support more than 20 million jobs.⁶ It is often said that the Gulf fuels and feeds the nation. Today, its lands and waters:

- » Produce 1.3 billion pounds of seafood annually – with a dockside value of \$661 million – that's more finfish, shrimp and shellfish than the entire US Atlantic seaboard fisheries combined 7
- » Support the largest remaining wild oyster harvest in the world 8
- » Attract more than 23 million recreational fishing trips annually, more than 30 percent of the US total trips taken⁹
- » Provide more than 600,000 jobs and \$9 billion in wages annually in tourism and recreation 10
- Produce more than half of the nation's domestic oil and gas, and house
 13 of the 20 largest ports (by tonnage) in the nation¹¹

Natural Resources Damage Assessment (NRDA)

Under NRDA parties responsible for spills are required to restore or replace (or pay the costs of restoring and replacing) the natural resources that are lost as the result of a spill and for the value that would have accrued to the users of those resources. In anticipation of NRDA costs, in 2011, BP committed \$1 billion in initial project funding so large-scale restoration can begin as soon as possible.

RESTORE the Gulf Coast States Act

On June 29, 2012, the RESTORE Act passed Congress as part of the Surface Transportation Extension Act. RESTORE guarantees that 80 percent of the Clean Water Act fines collected from BP and other responsible parties will return to the Gulf states to fund environmental and economic restoration development.

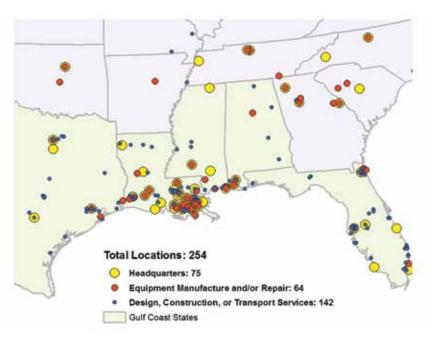
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Dr. Sherwood Gagliano CEO, Coastal Environments, Inc.

One of the first scientists to investigate coastal erosion and land loss in Louisiana, Dr. Sherwood "Woody" Gagliano has been CEO of Coastal Environments, Inc., a Baton Rouge-based consulting firm, since 1972. Along with his son Mark, he is also the co-inventor of Reefblk,™ a patented structure used in the construction of the Conservancy's oyster reef projects in the Gulf of Mexico.

"The Gulf of Mexico is one of the nation's most valuable resources. While it has been bruised, its recovery is not beyond the beneficial effects of environmental management, therapy and healing. We have an opportunity to recognize the irreplaceable value of the Gulf's bounty and create projects designed, funded, contracted and staffed with a maximum level of local involvement and economic, environmental and social benefits."



ECOSYSTEM RESTORATION INDUSTRY ALREADY CENTERED IN THE GULF COAST STATES

A Duke University analysis of contracts commissioned by the Environmental Defense Fund looked at contracts for restoration projects, including marsh creation, barrier island restoration and sediment diversions found a stunning 67 percent of national firms with such expertise and experience are located in Texas, Louisiana, Mississippi, Alabama and Florida. For most firms involved, restoration work makes up less than a quarter of their business. According to the Duke survey, another 67 percent of firms in the sector are small businesses. Given small businesses' contribution to creating jobs, and the struggles of small and medium businesses in the economic downturn, restoration work could provide a new way to retain or grow these vital enterprises.

Restoration Works and Puts People to Work, Now and in the Future

Restoring the Gulf of Mexico is not about turning back time, it's about seeing a new way forward by building on our current foundation. Restoration leverages existing industries and markets, and offers the chance to expand the ecological and economic resiliency that is key to the Gulf's prosperity.

Focusing restoration on reducing community vulnerability makes good economic sense. On average, the Gulf Coast suffers annual losses of \$14 billion because of storm damage.\(^{16}\) Healthy marshes, wetlands, reefs and other coastal habitats can help reduce that vulnerability by protecting against storm surges, erosion and coastal flooding. Over the next 20 years, the Gulf is vulnerable to an estimated \$300 billion in economic damages from hurricanes.\(^{17}\) A FEMAfunded study found that every dollar invested in hazard mitigation results in four dollars of costs savings.\(^{18}\)

Restoration is the gift that keeps on giving. Oyster reef construction, marsh building, protecting coastal forests and strengthening living shorelines restores damaged ecosystems and reduces vulnerability to storms. Protecting and restoring important habitats also creates social and economic resilience by sustaining tourism and other coastal businesses, as well as improving critical nursery areas for the Gulf's fisheries.

Coastal restoration projects also create a ripple effect throughout the region's economy. For example, contractors and subcontractors on restoration projects directly employ workers in the planning, construction, operations and monitoring of projects. This, in turn, creates demand for constructing and maintaining supplies and equipment (boats, dredges, earthmoving equipment, plants) that are critical to constructing restoration projects and also utilizes local services such as fuel, lodging, and food service providers.

Additionally, the workers hired for the projects make purchases and reinvest in their local economies. Thus, a coastal restoration project produces benefits multiplied well beyond its initial investments. These projects also support existing livelihoods such as fishing, tourism, and shipping—industries that rely on healthy lands and waters, contributing to a more resilient economy. The projects also support existing livelihoods such as fishing, tourism, and shipping—industries that rely on healthy lands and waters, contributing to a more resilient economy.

By pairing investments in restoration with workforce development initiatives, we can not only provide opportunities for economic mobility for workers, but can help to meet the needs of local businesses.²¹ A 2011 Manpower survey of employers found that despite near record unemployment, 52 percent of U.S. employers are experiencing difficulty filling critical positions, up from 14 percent just one year earlier.

Some of the most difficult jobs to fill—such as technicians, a critical job in restoration—were middle-skilled jobs requiring more than a high school diploma but less than a four-year degree.²² Each of the Gulf Coast states is currently experiencing a significant gap between the number of middle skill jobs they are trying to fill and the availability of middle-skilled workers, which includes many of the jobs prevalent in coastal restoration.²³

Ancil Taylor Vice President, C.F. Bean

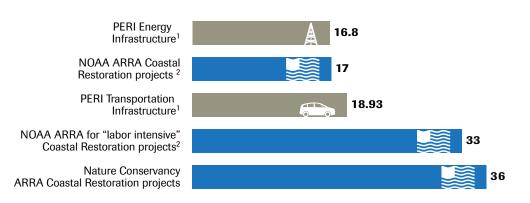
Ancil Taylor is Vice President of C.F. Bean, a Belle Chase, LA-based firm which, over the last 50 years, has grown from working in Louisiana oil fields to being a leader in the US dredging industry, with successful projects on four continents.

"There is tremendous opportunity to advance within the maritime construction industry. If you come in at an entry level, work hard, and stay with it, there really is a chance to move up the ladder economically." Mr. Taylor noted the story of a young man who began working with Bean as a ship's dishwasher and came to exemplify the opportunity for economic mobility within dredging firms.

"He first was promoted to cook, then he worked his way up within the crew, and between his on-the-job experience and training he was able to get licensed to eventually became a US Coast Guard certified captain piloting one of our vessels offshore." With new demand on the horizon, coastal restoration could provide a new source of much needed economic mobility for a new generation of workers.

The design, construction, operation and monitoring of large-scale coastal and marine restoration projects directly creates jobs. Studies have found that each \$1 million in investment in wetland restoration can create between 29 to 39 jobs when analyzing direct, indirect and induced jobs.²⁴ From the Conservancy's experience, eight of its most recent restoration projects around the US, including the Gulf, created or sustained more than 870 jobs, or 36 jobs per \$1 million in restoration funding.²⁵

Jobs for \$1 Million Investment



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Patrick Barnes President, BFA Environmental

Patrick Barnes is the President of BFA Environmental, an Orlando, Florida-based regional environmental engineering consulting firm established in 1994. Mr. Barnes is also the founder of Limitless Vistas, a nonprofit preparing New Orleans' area disadvantaged youths for environmental jobs.

"As a contractor, my firm would always run into issues finding qualified candidates, especially after Hurricane Katrina." Seeing a need and a chance to help economically struggling youth after the storm, Mr. Barnes began training students, helping them gain skills and certifications. The results have been very positive.

"If you look at planned projects in Louisiana and elsewhere, this could translate to a huge number of entry level job needs, including in monitoring and measurement. Companies can realize huge savings by training a local resident with a high school education to be a technician instead of hiring an entry level worker with a graduate degree. There is no downside, we can train someone locally and get the economy going. We just need to do a better job of connecting those dots."

After the oil spill in 2010, the US Department of Labor gave National Emergency Grants (NEG) to four Gulf states (Alabama, Florida, Louisiana, and Mississippi) totaling \$27 million to provide spill-dislocated workers, including commercial fishermen, skills training and placement services. These grants included funding for providing subsidized wages of up to 50 percent for six months for firms willing to conduct on-the-job training.²⁶ These funds are still available to firms working in Southeast Louisiana and can be used in connection with the jobs created by the tens of millions of dollars in the first round of projects funded under NRDA in the area.27

These projects will create a new need for workers and offer an outstanding opportunity for firms and businesses in the Gulf to acquire and train new workers without having to shoulder the entire burden of financial risk. Displaced fishers and deckhands—already skilled in boat operations and accustomed to and comfortable with time at sea—would likely have an easy transition to these occupations.²⁸

To understand the challenges of preparing underemployed fishers for coastal restoration jobs, Oxfam America commissioned SSA Consultants to bring together leaders in industry, fishers, and workforce development offices in a series of interviews and focus groups. Human relations directors and executives at leading dredging firms and their subcontractors identified 35 different occupations that firms believe would see increased demand as new projects are put out to bid. These occupations are already high demand jobs in the local labor markets, according to the Louisiana Workforce Commission (LWC).

Employers noted that entry-level jobs were hard work, and often include long hours away from shore, but for those who stayed with the work, the firms offered a high degree of upward mobility to advance within the company to higher paying jobs.²⁹ Some of the highest paying jobs, including US Coast Guard certified captains, were on the water.³⁰

Participants in the meetings agreed that the number one factor for advancing such

Selection of In-Demand Coastal Restoration Jobs (Louisiana)

Occupations	2010 Average Annual Wage	Length, Type of Training & Experience ³	Certifications and Licenses
Dredge Captain, Tugboat/Tender, USCG Certified Captain	\$75,082 ² / \$72,839 ¹	Related Work Experience	License Required
Ship Engineers	\$62,271 ²	Vocational Training	-
Construction Supervisors	\$56,886 ¹	Related Work Experience	-
Deck Hands	\$41,115 ² / \$37,561 ¹	Short Term	License Required
Welders, Fitters	\$41,000 ¹ / \$39,160 ²	Vocational Training	Certifications Available
Quality Control Technician	\$40,921 ¹	Moderate Term	Certifications Available
Heavy Equipment Operator	\$38,954 ¹ / \$37,586 ²	Moderate Term	Certifications Available
Mechanics (Heavy Equipment)	\$39,859 ¹	Vocational Training	-
Machinists	\$39,241 ¹	Long Term	-
Tractor Operators	\$31,218 ¹	Short Term	-
Marine Yard Workers, Construction Laborers	\$27,171 ¹	Moderate Term	Certifications Available
Engine Room Assistant	\$25,856 ¹	Short Term	-
Cooks	\$20,462 ¹	Long Term	-

Sources:

- ¹ Louisiana Regional Labor Market 1 (including Jefferson, Orleans, Plaquemines, and St. Bernard Parishes)
- ² Louisiana Regional Labor Market 3 (including Assumption, Lafourche, and Terrebonne Parishes)
- 3 Short Term typically means up to one month of on-the-job experience and may include informal training. Moderate Term means one to 12 months of combined on-the-job experience and informal training. Long Term means more than 12 months of on-the-job-training and postsecondary vocational training.

workforce initiatives will be building new collaboration across government, nonprofits and industry by: opening dialogue about the public resources to meet employers workforce needs between dredging firms and the Workforce Investment Boards (WIBs); facilitating community colleges and industry coordination on appropriate curriculums and certifications; equipping local nonprofits to explain career pathways and opportunities for economic mobility to unemployed and low income workers and connect them to WIBs; and bringing Coastal Protection and Restoration Authority procurement officials together with LWC forecasters to estimate the impacts on the area workforce and training needs going forward.

Between the available NEG funds and the potential of future workforce resources, such as under the RESTORE the Gulf Coast States Act, an enormous potential exists for creating a better skilled workforce and providing new economic opportunities for coastal residents in connection to coastal restoration projects, but it will require more and better collaboration.



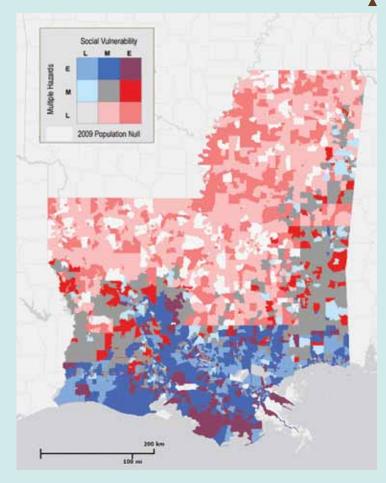
SOCIAL VULNERABILITY ON THE GULF COAST

The Social Vulnerability Map measures and illustrates the convergence of social vulnerability factors and environmental hazards.

The hazards that are mapped:

- Flooding
- Hurricane force winds
- Sea-level rise
- Drought

Poverty is the number one factor in determining a community's vulnerability to a disaster.³¹ Additional factors, such as race, ethnicity, gender, and specialneeds residents, also contribute to a community's ability to deal with hazards.





Emery Baya Sr. Vice President & Principal Environmental Engineer, Thompson Engineering

Thompson Engineering is a multi-disciplinary engineering design, environmental consulting, construction management, inspection and materials testing firm headquartered in Mobile, Alabama, which employs more than 340 people and provides a variety of environmental and engineering services to governmental, industrial and commercial clients.

"In recent years, we have been directing our firm's expertise towards coastal restoration initiatives and we plan to continue to build upon our experience and enhance our capabilities in this arena," said Emery Baya. "I am very optimistic about the future of the Gulf, because I feel that the business and environmental communities are coming together and recognize that wise stewardship of Gulf resources is a must in order for both economic and environmental objectives to be realized."

Thompson Engineering is a partner in the 100-1000: Restore Coastal Alabama initiative, which is working to build 100 miles of oyster breakwater reef, and in turn protect and promote the growth of more than 1,000 acres of coastal marsh and sea grass along Alabama's coast.

Aside from being a sought-after delicacy, oysters and the massive reefs they form are the foundation of a healthy and resilient coastal ecosystem, providing valuable services to both people and nature, including:

- » Increased catches of fish and crabs that rely on oyster reefs for food or shelter;
- » Protection from coastal erosion and flooding caused by waves; and
- » Removal of nitrogen from coastal water, the cause of algal blooms and dead zones which negatively impact fisheries and tourism.

Globally, an estimated 85 percent of oyster reefs have been lost, more than any other marine habitat. Yet recent projects in the Gulf of Mexico show that large-scale restoration can create man-made oyster reefs that duplicate many of the benefits of natural reefs.

Oyster reef restoration makes good economic sense. Environmental economist Timm Kroeger, Ph.D. with The Nature Conservancy recently completed the most comprehensive study to date that measures the economic and social benefits that reef restoration provides to Gulf communities.

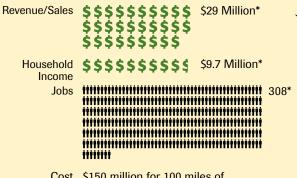
The study is based on analysis of two planned restoration projects in Alabama and draws on findings from studies of restored and natural reefs in Mobile Bay and other parts of the Gulf.

Kroeger's study estimates that an investment in oyster reef restoration will have a several-fold return on investment in terms of recreational and commercial fisheries and protection of property and public infrastructure. While not measured as part of the study, this restoration may also indirectly influence water quality and tourism. All of these factors combined strengthen Gulf Coast communities and economies and make them more resilient.

A one-time investment of \$150 million will fund the construction of 100 miles of oyster reefs over 10 years in the northern Gulf of Mexico. This investment will return far more than that amount in terms of goods and services produced in the local economy. An estimated 308 jobs per year will be supported during the 10-year construction phase, offering a boost to struggling coastal communities, some of which depend on seafood related jobs for 80 to 90 percent of their income.

Economic Impact From Construction of Oyster Reef Breakwaters (100 miles)

Each year, over a 10-year construction period of 100 miles



Cost \$150 million for 100 miles of Oyster Reef Breakwater

One mile of construction \$\$ \$2.9 Million in Revenue/Sales \$970,000 in Household Income

Cost: \$1.5 million for 1 mile

Annual impacts over the estimated 10-year construction period Source: Bureau of Economic Analysis RIMS II total effect multipliers for Baldwin and Mobile counties in Alabama

Protecting Our Coasts

The Gulf Coast's different economic sectors are entwined with the land and the water. Seven of the nation's 15 largest shipping ports are in the Gulf of Mexico. While the shipping industry is essential to the national and global economies, the wakes created by the cargo ships exacerbate erosion along an already eroding coastline. Not only are we losing valuable coastal property but the erosion also contributes to water quality issues and impacts to habitat for Important commercial and recreational fisheries.

Total Annual Recurring Economic Impact From Commercial Fishery Enhancement Oyster Reef Breakwaters





Oysters*

Household Income \$\$

Revenue/Sales \$\$ \$1.07 Million

Revenue/Sales \$\$\$\$\$\$\$\$\$\$.8 Million

Household Income §

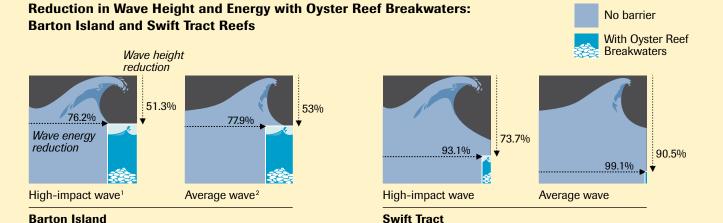
\$300,000

\$1.9 Million

Jobs **!!!!!!!!!!!!!!!** 15 Jobs

Promoting Healthy Fisheries

Commercial and recreational fisheries are the lifeblood of the Gulf Coast economy. In 2008, commercial fishermen in the Gulf harvested 1.27 billion pounds of finfish and shellfish, earning \$659 million in total landings revenue. That same year, recreational fishers took 24 million fishing trips in the Gulf. Restored oyster reefs are key to promoting healthy fisheries, which translates into an economic boon for the regional and national economy.



- High-impact wave has following offshore wave characteristics: height, 1m; period, 4.0 seconds. These characteristics correspond to the average of all waves that generate the top 5% and top 10% highest wave power values in the Bay.
- ² Average wave has offshore wave characteristics corresponding to the average wave in Mobile Bay: height, 0.4m; period, 2.0 seconds.
- ▲ Oyster reefs protect shorelines by absorbing wave energy and significantly reducing the energy of high power waves by as much as 76 to 93 percent, which, in turn, lessens the amount of coastal erosion, flooding and costly damage to private property and public infrastructure. Without oyster reefs to dampen the wave energy, private property owners will continue to use rip-rap or bulkheads to protect their land, which requires costly maintenance. Oyster reefs on the other hand are largely self-sustaining.

Based on conservative harvest estimate of 10 oysters/m² on 3.6 miles of project length/5.9 acres. Sources: Estimated based on data in Kirkley (2009) and Bureau of Economic Analysis RIMS II total effect multipliers for the Baldwin and Mobile counties in Alabama.



HIGHLIGHTS OF ECOSYSTEM RESTORATION FOCUSED ECONOMIC DEVELOPMENT INITIATIVES

Mitch Andrus

Vice President, Royal Engineering

"Royal Engineering was founded soon after Katrina. We had a business plan, but the amount of work created after the storm helped us grow, scaling up to a workforce of over 100 people helping get communities back on their feet," said Mitch Andrus, a vice president at the regional firm based in New Orleans with satellites in Alabama, Louisiana and Texas. Federal and state investment post-Katrina helped many small firms grow, in Royal's case exponentially.

Now Andrus sees a similar opportunity in coastal restoration. "Royal created a small division around restoration and we have worked on initial projects, but with the Louisiana Master Plan and projects being discussed across the coast, this could be a significant opportunity. We continue to see more small and local firms winning contracts, this is good news for Gulf Coast small businesses."

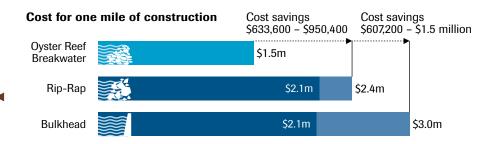
Oyster reef breakwaters are largely selfsustaining, with minimal maintenance costs. Traditional shoreline protection measures (seawalls, bulkheads or riprap), require maintenance, and, in many cases, need full replacement during the lifetime of an oyster reef breakwater. 42

Economic Developers See Potential in Restoration

With so many businesses engaged in restoration and a growing set of research institutions tackling water management challenges, state and local economic development agencies have launched new initiatives to support the restoration economy and further increase community resilience. Louisiana Economic Development, the state of Louisiana's economic development agency, named water management as one of the state's top high growth new market opportunities. A study by McKinsey & Co. estimates that by 2029 \$3 to \$4 billion per year will be spent in the state on water management, including coastal restoration, generating as many as 45,000 jobs.38

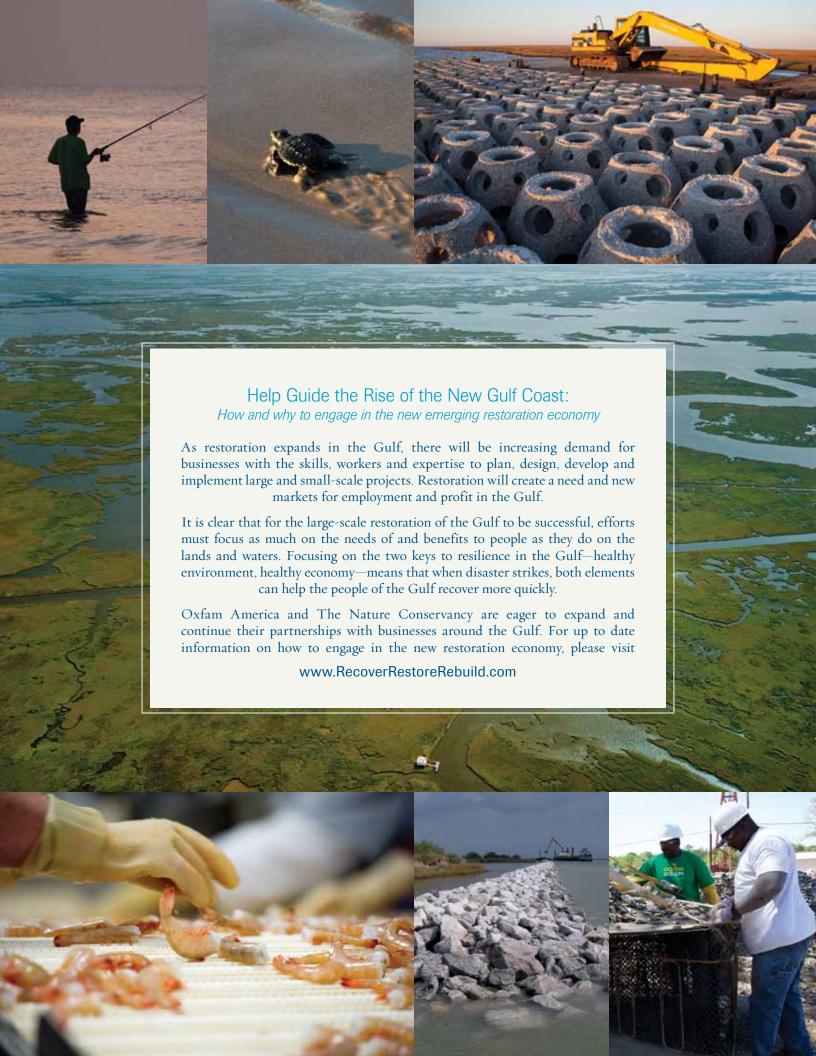
Coastal restoration is not only a need along the Gulf Coast. According to the global reinsurance company Swiss Re, by 2030, the world will spend anywhere from \$35 to \$135 billion a year on coastal flood defense, flood-resistant buildings, and other adaptations.³⁹ With new markets in Asia and elsewhere developing coastal management plans that include restoration and green infrastructure activities, this could create a new export industry for the Gulf Coast. 40 The Netherlands' for example, after years of investment in water management projects and research, now has an annual export market in water technologies, which now makes up almost two percent of its gross national product. 41

Cost-Savings¹ Potential with Oyster Reef Breakwaters Versus Traditional Methods²



¹ Source: MASGP-07-031; these estimates do not include permitting or design costs

² If there are no oyster reef breakwaters, private owners will protect their land using traditional rip-rap or bulkheads.



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The Nature Conservancy has been part of the Gulf Coast community for more than 35 years and has offices, people and projects in every state that touches the Gulf. Working with partners, the Conservancy has helped protect or restore more than 3 million acres in the five Gulf states. In the wake of Hurricane Katrina and the Deepwater Horizon oil spill, the Conservancy has concentrated its conservation efforts on large-scale restoration of the habitats — oyster reefs, marshes, and coastal forests — that are the foundation of the Gulf's health and productivity.

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